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ABSTRACT

A number of challenges will be faced by the school testing community in the future. The content of achievement tests must match the curriculum, which changes its focus over the years. Test content should reflect expanding curriculum areas such as computer literacy, consumer skills, and critical thinking. Test publishers will provide data for decision making, not merely instruments. Tests should be matched to the particular purpose for which the scores will be used. Careful test construction may result in shorter tests which provide more information. One important challenge involves learning how to utilize test information. A variety of audiences use test results, and they have different information needs. Advertising techniques will be used to communicate information to these audiences. Turnaround time in scoring tests must be faster; microcomputers and telephone transmission of data will help achieve increase in speed. Testing individuals at the proper level will be facilitated by computer adaptive testing and branching. Microcomputers will be used increasingly in both testing and instruction. Test data will be linked to other data bases, and comparative normative data will be updated more often. Finally, item analyses should also target what students have not yet mastered. (GDC)

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TESTING: FUTURE CHALLENGES, FUTURE RESPONSES

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The future relates to our ability to meet a series of challenges. I plan to spend my allotted time this afternoon suggesting to you 13 areas which I consider to be among today's most significant challenges to the school testing community. I'll also be responding to each area by engaging in just a bit of blue-skying, by forecasting how I believe the next decade will realistically deal with each of those challenges.

Given the distinguished panel of colleagues who preceded me, I suspect that you may find some of my comments either repetitive or lacking the robust development exhibited by the more in-depth discussions which you have just heard. I mention this not by way of apology, but to point out that my role is to frame a general summary, without having first heard the presentation which went before.

The challenges to testing which I'll discuss are:

1. To better/more accurately match test content to the curriculum
2. To broaden content coverage
3. To provide test data more closely geared to decision making
4. To match the test to the purpose of the information it provides
5. To utilize test information more effectively
6. To recognize multiple audiences for test data
7. To learn to communicate information to those various audiences
8. To provide information more rapidly
9. To tailor tests to the level of pupil knowledge
10. To harness micro-technology
11. To link test data to other school system data bases
12. To provide better and more frequent normative data
13. To better target pupil deficiencies

1. Heading my list of challenges is the necessity to match the content of tests to the school's curriculum. It is difficult to follow education for any length of time without being impressed, or perhaps depressed, by the frequent pendular motion of the focus of educational curricula. Examples of the curricular pendulum include the science and foreign language emphasis promulgated by the launching of Sputnik in 1957, and, conversely, the emphasis on affective education and career education that marked the late 60's and early 70's. Within each of these swings there is a sometimes subtle, and often not-so-subtle, shift in approach and in process, and in many instances, in basic focus. An area as seemingly straightforward as mathematics, for example, was virtually reshaped with the advent of the so-called "new math".

The instruments that are used to assess achievement, must, in fact, reflect changes in the nation's curriculum--changes that we see only as a result of differing emphasis, but also changes more regional in nature. This is of particular importance given the increasing emphasis upon state testing. That is the challenge then--to match test content with changing curricular emphasis.

What does this challenge signify for the 1990's? I believe that it points very directly toward two realities--1) an enormously increased reliance upon test objectives and item banks, and 2) greater emphasis on the development and use of customized tests.

2. The second challenge relates to expanding content coverage. We all know that there is more to the curriculum than simply reading and mathematics; yet, for many years the primary emphasis within testing has been reading, language arts, and math. This is now changing; rapidly in fact.

The realities of the 90's will, I believe, see us providing evermore accurate

forms of assessment in such curricular areas as science and social studies, as well as in such skill areas as writing and critical thinking. Science and social studies achievement tests are presently available in several of the large nationally normed achievement test series. In meeting the demand for broader content coverage, the new CAT includes a series of nine end-of-course tests in such areas as biology, chemistry, physics, American history, world history, algebra, geometry, consumer skills and computer literacy.

3. The third challenge relates to providing data for decision making, not merely tests. I would suggest to you that when most school districts purchase tests, they really don't particularly care about the instrumentation. What they are really interested in is the quality of the information that the test will ultimately yield. At CTB/McGraw-Hill, we see our primary business as one which provides data for instructional, curricular, and management decision making.

I believe that by the 1990's, we may no longer be viewed as being in the test business, but rather in the information business. School districts by that point in time may no longer have offices of testing, but rather school district data offices. The information revolution that we have heard spoken about for the last half-dozen years has had an increasingly greater effect on the educational processes. What is education, after all, if not a means of sharing information and knowledge, and strengthening those processes of critical thinking that enable information to be collected, created, comprehended, and applied.

4. Another challenge is to develop a means of matching the measurement tool, that is, the test, to the particular purpose for which the information that the test will generate, will be used. For example, norm-referenced tests are typically administered for specific purposes. In some instances Chapter I evaluation requirements are the

primary purpose for the administration of such tests. In other instances the expectation of comparing a district's scores with those of neighboring districts is paramount. Accountability demanded by board members or community, or perhaps media pressure may also serve as the primary reason that school districts use norm-referenced tests. Criterion-referenced tests, mastery tests, and competency tests all have their primary purposes as well.

An area that has been, unfortunately, neglected is the broader yet more targeted use of test results. Carefully building tests so that they measure curricular objectives and are directly linked to cognitive traits will enable school districts in the 90s to administer shorter tests, yet generate considerably more useful information from the instruments.

5. The fifth challenge, and one of extreme importance, is that of learning how to utilize test information. Information, as mentioned before, is linked to the decision process, and the utility of that information is key. Providing information without a means of utilizing that information might parallel the age-old question about the tree falling in the forest with nobody to hear it. If a test is administered, but the results of that test are never used, did it in fact serve a purpose? I would contend that it did not!

The realities of the 1990s, I believe, will require that utilization strategies for test information will be determined in advance of those data ever being disseminated. Test systems will include built-in utilization strategies.

6. The sixth challenge is to recognize that there are a variety of audiences to be

served by test results, to determine what information each of those audiences requires, and to provide it. Audiences or clients run the gamut of the educational organizational hierarchy: Boards of education, through superintendents; deputy, associate and assistant superintendents; curriculum directors, project managers, and program directors; school principals, teachers and students. Also let's not forget groups that play a major role in influencing schools such as parents, newspapers and the mass media, taxpayers, and city government officials.

7. The seventh challenge directly relates to the prior one. In this instance, the challenge is to COMMUNICATE information to the various audiences referred to previously. It is one thing to be cognizant of the fact that different audiences or client groups exist; it is quite another to design specific means of communicating information to each audience.

The reality in this instance is that we need to learn more about the process of communication and about advertising. In doing so, critics might say, education will become too "Madison Avenueish." But so be it, because Madison Avenue no longer stands for fabrication and exaggeration. With today's emphasis on consumerism, the federal government and the advertising council closely monitor the truth and objectivity of commercials and advertisements.

The best test information in the 1990s will be slicker, will likely be prepackaged, and will be better focused and targeted to particular clients and client groups. It will be easy to understand and will be cleverly presented.

8. The eighth challenge relates to speed. Information simply must be provided to those who need it more quickly. Turnaround time, particularly that related to the

scanning and scoring of tests must be increased dramatically.

There was a time during the 70s when many larger school districts went to in-house scoring as an answer to this problem. Given the availability of private sector funds for investing in new technology, however, some of the large test publishers and technology companies could soon surpass the speed of individual school districts in scanning and scoring their tests and answer sheets. In addition, large school districts faced other problems such as aggregating scores and computer producing information feedback vehicles like item analyses, individual pupil records, class records, and district-wide analyses needed to satisfy federal reporting requirements.

One can foresee, in those instances where districts still use paper at all, more districts using micro or desk-top scanners, at the individual school level. But rather than attempting to do the aggregation and manipulation necessary, they'll send disks or tapes containing raw item information back to a centralized scoring facility.

Calculation and aggregation will be carried out according to the school districts' instructions. The provider of scoring services will also produce a variety of custom tailored information report forms, and will store all of the item data for the school district, so that should the district desire to conduct additional research on it at a later time, the data will always remain available for them to access. Another alternative to the use of disks will be direct transmission of data over telephone lines through modems hooked up at individual schools or at district testing offices, or perhaps via satellite.

9. Yet another challenge relates to our ability to tailor testing to what the pupil actually knows. Out-of-level testing, or out-of-grade testing, represents an attempt introduced in the early 1970s to more closely measure and accurately ascertain the level

of pupil knowledge. However, a number of problems of a logistical nature were initially associated with out-of-level testing. Perhaps the most difficult to deal with was assigning a level to the student before testing. Though a number of test publishers provide locator tests that make this considerably easier, additional testing time, and higher costs have dissuaded many districts from utilizing such an approach. This is unfortunate.

I believe that the 1990s will provide us with better means to deal with the question of tailored testing. Computer adaptive testing and the branching technology associated with it may well provide the answer to this challenge.

10. Computer adaptive testing, however, represents but one of many new technological breakthroughs spawned in Silicon Valley. The real challenge is to harness this technology. The microcomputer has enormous potential as an instructional tool. However, microprocessors are meant to supplement not to supplant the teacher. Testing is part of the instructional process, and as such, should benefit greatly from the advent of microcomputers. Once again, care needs to be taken so as to not overlook the critical role played by the teacher in applying test results to the teaching, learning, testing process.

I believe that in the future the classroom teacher and microprocessors will function as smoothly together as the teacher and chalkboard do today.

I can envision, for example, the desk of the future--a slab of lucite that will more closely resemble a wet carrel or a fully interactive learning center than a conventional desk. This learning station will have a built-in microcomputer, wired to a central control panel in the front of the room. This will function either under the

teacher's control or independently. It will serve as both tester and tutor. Information will be fed back to the classroom teacher, for the teacher to target instructional alternatives to each individual pupil.

11. Yet another challenge is to link test data to all other school system data bases. School districts have shown remarkable success in doing so already. Such districts claim not a single macro information file, but rather a series of inter-related data systems linked by a common pupil directory information number that serves as a bridge to the files. Included among the types of such data bases are standard information directory files containing names, addresses, birthdates, etc.; test files containing standardized or norm-referenced test scores; a progress or mastery file; grade files; attendance files; fiscal data files; and scheduling files.

We already have a mega data-based machine, capable of storing, manipulating, and feeding back information concerning multiple data bases for many districts. Such machinery will enable a single source to accurately aggregate, carefully manipulate, and safely store test and other demographic information for virtually every school student in the United States.

12. Another challenge, one which I am sorry to say was also a challenge that we failed to meet in the 70s, relates to a means of updating comparative normative data on a more frequent basis. It has become increasingly difficult and more and more expensive for test publishers to collect data from school districts in order to create statistically defensible and current norms.

Our ability to provide more current comparative information relates, in part, to the Mega-Data Base I mentioned previously. I expect to see by 1990 a use being made

of "user norms." Major test batteries will continue to be normed in a base year. However, following that base year, norms will be collected for actual customer usage, and as a result of careful stratified sampling, will be updated on an annual basis. National norms will be available not unlike the Standard and Poors Index of 500 Stocks, with a carefully selected sample maintained and reported on a regular basis. Certain selected sub-samples might also be reported, in the same way that industrials, utilities, or technology stocks are. Thus, the 1990s could provide us with an index of urban districts, an index of suburban districts, an index of rural districts, a Southern index, a California index, etc.

13. Last but not least, this, the final challenge in my suggested baker's dozen, is the need to determine and target what students do not know, as well as those skills that they have already mastered. Item analyses typically focus upon and report information which paints a positive picture. It's the old half-full, half empty approach. Don't get me wrong! I believe that school districts should indeed report to the public all of their successes and should receive full credit for those successes.

On the other hand, it seems to me that the instructional process mandates that we deal with those students who have not mastered certain skills, and work with them until they have, in fact, achieved mastery. In the future we will see new types of common error analyses developed and become standard instructional tools.

I've suggested thirteen challenges to testing; I suspect that there are others that I've omitted. The point is that, as was true in the past and in the present-day, the future of testing will be frought with challenges. The extent to which those challenges are well met, however, will insure a strong future for testing.